Programme Structure

SCHOOL OF ENGINEERING & TECHNOLOGY

Diploma in Civil Engineering

Programme Code:0102

Batch: 2024-2027

Vision of the University

To be recognized as an Institution of excellence, facilitating learning, fostering creativity, knowledge creation, innovations, consultancy and leadership in multiple areas to build a conscious community that will positively impact living beings for a sustainable future.

Mission of the University

1. **Offers a wide range of Undergraduate and Post graduate Courses.**
   To create conducive environment for an interactive and application oriented experiential learning making the Institute a preferred destination for work and study.

2. **Research, Innovation, Consultancy & Entrepreneurial Culture**
   To Foster creativity, research and innovation orientation in students and faculty in basic and applied areas in all of its disciplines, provide cost effective solutions and nurture entrepreneurial capabilities to accelerate growth.

3. **Social Relevance with local actions on global thoughts**
   To act as a catalyst in social change by developing academic, social, political, technological, scientific, industrial and business leadership in the spirit "Think Globally and Act Locally"; by providing ample opportunities to develop team spirit, sportsmanship and love for culture and national heritage.

Core Values

Integrity

Leadership

Diversity

Community

Vision of the School of Polytechnic

To become a centre of excellence for providing quality and value based education in the field of diploma engineering that will produce skilled technocrats to meet industry requirements.

Mission of the School of Polytechnic

- To provide technical knowledge and skills by using latest engineering tools.
- To facilitate industry-institute interaction to explore the industrial knowledge of the students.
- To inculcate ethical and professional values among students.
- To impart quality education to the students coming from rural parts and to conduct different curricular & co-curricular activities to enhance the academic.

Core Values

Integrity

Leadership

Diversity

Community

Programme Educational Objectives (PEO's)

PEO 1. To provide solid foundation in electronics engineering along with good communication and entrepreneurship skills for tackling social issues.

PEO 2. To impart students with good scientific and engineering knowledge in order to analyse, design and create novel products for giving practical solutions to real life problems.

PEO 3. To create engineers with sound technical knowledge for facing all sorts of challenges in industry or in pursuance of higher studies.

PEO 4. To motivate students, to acquire aptitude for lifelong learning along with leadership skills, team spirit and ethical values so that they upgrade themselves with the latest trends in the field of engineering in order to serve the society.

PROGRAMME OUTCOMES (POs)

PO 1. **Basic and Discipline specific knowledge:** Apply knowledge of basic mathematics, natural sciences and engineering fundamentals and civil engineering specialization to solve complex engineering problems.

PO 2. **Problem analysis:** Identify, formulate, and analyze complex civil engineering problems reaching substantiated conclusions using principles of mathematics, natural sciences, and engineering sciences.

PO 3. **Design/ development of solutions:** Design solutions for complex civil engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, and environmental considerations.

PO 4. **Engineering Tools, Experimentation and Testing:** Apply modern engineering tools, techniques, and resources to civil engineering activities, with an understanding of the limitations.

PO 5. **Engineering practices for society, sustainability and environment:** Apply knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

PO 6. **Project Management:** Demonstrate knowledge and understanding of civil engineering management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 7. **Communication**: Communicate effectively on complex engineering activities with the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 8. **Teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 9. **Life-long Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO 1. An ability to design, analyze, and evaluate structural components and systems by applying principles of structural engineering to ensure safety, reliability, and efficiency in the built environment..

PSO 2. An ability to understand and implement modern construction practices, project management techniques, and use of construction materials and equipment to deliver quality construction projects within constraints such as cost, time, and sustainability.

PSO 3. An ability to apply concepts of soil mechanics and foundation engineering to design and analyze foundations, retaining structures, and other geotechnical systems, ensuring stability and performance under various loading conditions.

PSO 4. An ability to perform land surveying, mapping, and utilize remote sensing and GIS technologies for planning, designing, and managing civil engineering.

PSO 5. An ability to communicate effectively in both oral and written forms, present technical information clearly, work collaboratively in multidisciplinary teams, and demonstrate professional ethics, social responsibility, and awareness of environmental impacts in civil engineering practices.

SDGI GLOBAL UNIVERSITY, GHAZIABAD

SCHOOL OF ENGINEERING & TECHNOLOGY

SCHEME OF STUDIES AND EVALUATION FOR DIPLOMA IN CIVIL ENGINEERING

W.E.F. Session: 2025-26 **(Batch: 2024-2027)** **Semester - III**

S. No	Status	Paper Code	Subjects	Study Scheme Lec / Week			Hours	Credits	CIE	ESE	Total	Pass Marks
				L	T	P						
1	DC	D060924301	Hydraulics and Hydraulic Machines	3	1	-	4	3	50	50	100	40
2	DC	D060924302	Concrete Technology	3	0	-	3	3	50	50	100	40
3	DC	D060924303	Structural Mechanics	3	1	-	4	3	50	50	100	40
4	DC	D060924304	Building Construction	2	1	-	3	2	50	50	100	40
5	DC	D060924305	Building Drawings	4	0	-	4	4	50	50	100	40
6	VAC	D06VA24305	*Human Values & Professional Ethics	3	0	-	3	3	50	50	100	40
7	DC	D060924351	Hydraulics and Hydraulic Machines Lab	-	-	2	2	1	60	40	100	40
8	DC	D060924352	Concrete Technology Lab	-	-	2	2	1	60	40	100	40
9	DC	D060924353	Structural Mechanics Lab	-	-	2	2	1	60	40	100	40
10	DC	D060924354	Building Construction Lab	-	-	2	2	1	60	40	100	40
Total				18	3	8	29	22	540	460	1000	400

*Subjects denotes the subject that are common with other diploma programs.

Semester-03

SCHOOL OF ENGINEERING & TECHNOLOGY

HYDRAULICS AND HYDRAULIC MACHINES

(D060924301)

L	T	P
3	1	0

JUSTIFICATION

Subject of Fluid Mechanics is a basic engineering subject and helps in solving fluid flow problems in the field of Civil Engineering. The subject deals with basic concepts and principles in hydrostatics, hydro kinematics and hydrodynamics and their application in solving fluid -mechanics problems.

DETAILED CONTENTS

UNIT 1: Introduction **08 Hours**

1.1 Fluids: Real and ideal fluids

1.2 Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics

1.3 **Properties of Fluids (definition only)**

1.4 Mass density, specific weight, specific gravity, viscosity, surface tension -cohesion, adhesion and, capillarity, vapour pressure and compressibility. Newton's Law of viscosity, Newtonian and Non-Newtonian fluids.

UNIT 2: Hydrostatic Pressure **08 Hours**

2.1 Pressure, intensity of pressure, pressure head, Pascal's law and its applications

2.2 Total pressure, resultant pressure, and centre of pressure

2.3 Total pressure and centre of pressure on horizontal, vertical and inclined plane surfaces of rectangular, triangular, trapezoidal shapes and circular.

2.4 **Measurement of Pressure**

2.5 Atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure.

2.6 Piezometer, simple manometer and differential manometer, micro Manometers, Bourden gauge and dead weight pressure gauge, numerical problems related to manometers.

UNIT 3: Fundamentals of Fluid Flow **10 Hours**

3.1 Types of Flow: Steady and unsteady flow, laminar and turbulent flow, uniform and non-uniform flow, stream line, stream tubes, streak line and path line.

3.2 Types of hydraulic energy: Potential energy, kinetic energy, pressure energy

3.3 Bernoulli's theorem; statement and description (without proof of theorem), Simple numerical problems.

3.4 Venturimeter and orifice meter

3.5 Pitot tube

3.6 **Flow Measurements**

3.7 Orifices and mouthpieces

3.8 Current meters

3.9 Notches and weirs

UNIT 4: Flow through Pipes **10 Hours**

4.1 Definition of pipe flow; Reynolds number, laminar and turbulent flow - explained through Reynold's experiment

4.2 Critical velocity and velocity distributions in a pipe for laminar flow

4.3 Head loss in pipe lines due to friction, sudden expansion and sudden contraction, entrance, exit, obstruction and change of direction.

4.4 Hydraulic gradient line and total energy line. Simple numerical problems

4.5 **Flow through open channels**

4.6 Definition of an open channel, uniform flow and non-uniform flow

4.7 Discharge through channels using
i) Chezy's formula (no derivation)
ii) Manning's formula (no derivation)

4.8 Most economical channel sections (no derivation, only simple numerical problems)
i) Rectangular
ii) Trapezoidal

UNIT 5: Hydraulic Machines **10 Hours**

5.1 Hydraulic pump, reciprocating pump, centrifugal pumps (No numerical and No derivations), impulse and reaction turbines (may be demonstrated with the help of working models)

TEXT BOOKS

1. Hydraulic and Hydraulics machines by H K Singh , Jy Praksh Nath Publications, Meerut.
2. Hydraulic And Hydraulic machines by J.K. Kapoor bharat bharti prakashan Meerut.

REFERENCE BOOKS

1. Fluid Mechanics and Hydraulics by Jagdish Lal; Delhi Metropolitan Book Co. Pvt Ltd.
2. Hydraulics and Fluid Mechanics by Modi, PN, and Seth, SM; Delhi Standard Publishers Distributors.
3. Hydraulics and Hydraulics Machines by Khurmi RS ; S Chand and Co., Delhi
4. Laboratory Manual for Fluid Mechanics by Poonia MP and Jakhar OP; Standar Publishers Distributors, Delhi.

SCHOOL OF ENGINEERING & TECHNOLOGY

CONCRETE TECHNOLOGY

(D060924302)

L	T	P
3	0	0

JUSTIFICATION

Diploma holders in Civil Engineering are supposed to supervise concreting operations involving proportioning, mixing, transporting, placing, compacting, finishing and curing of concrete. To perform above functions, it is essential to impart knowledge and skills regarding ingredients of concrete and their properties; properties of concrete in plastic and hardened stage, water cement ratio and workability; proportioning for ordinary concrete; concreting operations and joints in concrete.

DETAILED CONTENTS

UNIT 1: Introduction **7 Hours**

1.1 Definition of concrete, properties of concrete, uses of concrete in comparison to other building materials. Advantages and disadvantages of concrete.

1.2 Cement: physical properties of cement; different types of cement as per IS Codes

1.3 **Aggregates:** Classification of aggregates according to size and shape, Characteristics of aggregates: Particle size and shape, surface texture, specific gravity of aggregate; bulk density, water absorption, surface moisture, bulking of sand, deleterious materials soundness.

1.4 Water: Water Quality requirements as per IS:456-2000

UNIT 2: Water Cement Ratio **7 Hours**

2.1 Hydration of cement principle of water-cement ratio, Duff Abram' s Water cement ratio law: Limitations of water-cement ratio law and its effects on strength of concrete

2.2 **Properties in plastic state**: Workability, Segregation, Bleeding and Harshness, Factors affecting workability, Measurement of workability: slump test, compacting factor, Recommended slumps for placement in various conditions as per IS:456-2000/SP-23

2.3 **Properties of Concrete:** Properties in hardened state: Strength, Durability, Impermeability, Dimensional changes;

UNIT 3: Properties of Concrete **7 Hours**

3.1 Objectives and parameters of mix design, introduction to various grades as per IS:456-2000; proportioning for nominal mix design as prescribed by IS 456-2000

3.2 Adjustment on site for: Bulking of fine aggregate, water absorption of aggregate, workability

3.3 Difference between nominal and controlled concrete

3.4 Introduction to Admixtures (chemicals and minerals) for improving performance of concrete.

UNIT 4: Special Concretes (only features) **08 Hours**

4.1 Concreting under special conditions, difficulties and precautions before, during and after concreting

- Cold weather concreting
- Under water concreting
- Hot weather concreting

4.2 Ready mix concrete

4.3 Fibre reinforced concrete

4.4 Polymer Concrete

4.5 Fly ash concrete

4.6 Silica fume concrete

4.7 Self compacting concrete

4.8 **Storing of Cement:** Storing of cement in a warehouse, Storing of cement at site, Effect of storage on strength of cement, Determination of warehouse capacity for storage of Cement

4.9 Storing of Aggregate: Storing of aggregate at site

4.10 **Batching** (to be shown during site visit): Batching of Cement, Batching of aggregate by: Volume, using gauge box (farma) selection of proper gauge box, Weight spring balances and batching machines, Measurement of water

4.11 **Mixing:** Hand mixing, Machine mixing - types of mixers, capacities of mixers, choosing appropriate size of mixers, operation of mixers, Maintenance and care of mixers, Batching and mixing plants

4.12 **Transportation of concrete:** Transportation of concrete using: wheel barrows, transit mixers, chutes, belt conveyors, Dumpers and trucks, tremie, mono rail system, pumps, tower crane and hoists.

4.13 Placement of concrete Type of form works and scaffoldings, Checking of form work, shuttering and precautions to be taken during placement

4.14 **Compaction:** Hand compaction, Machine compaction - types of vibrators, internal screed vibrators and form vibrators, Selection of suitable vibrators for different situations

4.15 **Finishing concrete slabs** - screeding, floating and trowelling

4.16 **Curing:** Objective of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing, Duration for curing and removal of form work

4.17 **Jointing:** Location of construction joints, treatment of construction joints, expansion joints in buildings - their importance and location

4.18 **Defects in concrete:** Identification of defects and methods of removing defects

UNIT 5: Importance and methods of non-destructive tests (introduction only) **06 Hours**

5.1 Rebound Hammer Test

5.2 Pulse Velocity method

TEXT BOOKS

1. Concrete Technology by D.V Gupta Asian Publishers Distributors, Mujaffarnagar
2. Ranjan Kumar, Vayu Educatio of India, Darya Gunj New Delhi.

REFERENCE BOOKS

1. Concrete Technology by Krishnamurthy, KT Rao, A Kasundra and Khandekar, AA; Dhanpat Rai and Sons, Delhi
2. Text Book of Concrete Technology by Gupta BL and Gupta Amit; Standard Publishers Distributors, Delhi.
3. Concrete Tecnology by Handoo, BL, Puri, LD and Mahajan Sanjay; Satya Prakashan, New Delhi.
4. Laboratory Manual on Concrete Technology by Sood, Hemant, Mittal LN and Kulkarni PD; CBS Publishers, New Delhi.
5. Concrete Technology by Birinder Singh; Kaption Publications, Ludhiana,
6. Module on Special Concretes by Dr. Hemant Sood; NITTTR Chandigarh.

SCHOOL OF ENGINEERING & TECHNOLOGY

STRUCTURAL MECHANICS
(D060924303)

L	T	P
3	1	0

JUSTIFICATION

This is a basic engineering subject. The purpose of the subject is to impart basic knowledge and skill regarding properties of materials, concept of stresses and strains, bending moment and shear force diagrams, second moment of area, bending and shear stresses, slope and deflection and analysis of trusses. The above knowledge will be useful for designing simple structural components. This subject is very important to develop basic concepts and principles related to strength of materials. This subject will also enable the students to continue their further education.

DETAILED CONTENTS

UNIT 1: Properties of Materials **10 Hours**

1.1 Classification of materials, elastic materials, plastic materials, ductile materials, brittle materials

1.2 Introduction to tensile test, compressive test, impact test, fatigue test, torsion test on metals

1.3 Communications barriers and how to overcome them

1.4 Barriers to Communication, Tools of Communication

1.5 Concept of stress, normal and shear stresses,

1.6 Hooke's law, modulii of elasticity and rigidity, Bulk modulus of elasticity, relationship between the elastic constants.

1.7 Stress-strain diagram for mild steel and HYSD steel, proof stress, mechanical properties, factor of safety.

UNIT 2: Shear Force and Bending Moment **12 Hours**

2.1 Concept of a beam and supports (Hinges, Roller and Fixed), types of beams: Simply supported, cantilever, propped, over hang, fixed and continuous beams (only concept).

2.2 Types of loads (dead load, live load, snow load, wind load seismic load as per IS Codes etc) and types of loading (point, uniformly distributed and uniformly varying loads).

2.3 Bending Moment and shear force diagrams for cantilever, simply supported and overhanging beams subjected to concentrated, uniformly distributed and varying loads.

2.4 Fixed and continuous beams-simple numerical problems.

UNIT 3: Bending Stresses in Beams **10 Hours**

3.1 Concept of pure/simple bending

3.3 Moment of resistance

3.4 Calculations of bending stresses

3.5 Concept of shear stresses in beams, shear stress distribution in rectangular, circular I, T, L sections for beams.

UNIT 4: Shear Stresses in Beams **08 Hours**

4.1 Determination of slope and deflection using Moment Area Theorem for simply supported beam for pointed load and U.D.L, Conjugate beam method and double integration method. (no derivation, numerical problems only)

4.2 Theory of columns- long and short columns, slenderness ratio

4.3 Problem solving using Euler's and Rankine formula

UNIT 5: Analysis of Trusses **06 Hours**

5.1 Concept of a perfect, redundant and deficient frames

5.2 Assumptions and analysis of trusses by:

a) Method of joints

b) Method of sections

TEXT BOOKS

1. Structural Mechanics by Vijay Mittal Asian Publishers Distributors, Mujaffarnagar.
2. Structural Mechanics by C.M. Verma Jy Praksh Publication Meerut.

REFERENCE BOOKS

1. Strength of Materials by Ramamrutham, S ; Dhanpat Rai and Sons., New Delhi.
2. Applied Mechanics and Strength of Materials by Ram Chandra; Standard Publishers. Delhi.
3. Strength of Materials by Punmia, BC ; Standard Publishers, Delhi,
4. Strengths of Materials by Sadhu Singh; Standard Publishers, New Delhi
5. Structural Mechanics by Singh Birinder; Kaption Publishers, Ludhiana
6. The Functional aspects of Communication Skills – Dr. P. Prasad, S.K. Katria & Sons, New Delhi

SCHOOL OF ENGINEERING & TECHNOLOGY

BUILDING CONSTRUCTION

(D060924304)

L	T	P
2	1	0

JUSTIFICATION

Diploma holders in Civil Engineering are supposed to effectively supervise construction of buildings. Effective supervision is essential to obtain/provide a fault free service from contractors to users. To perform above task, it is essential that students should have knowledge of various sub components of buildings like foundations, walls, roofs, staircases, floors etc., and their constructional details as well as preventive, remedial and corrective methods of common construction faults. Therefore, the subject of Building Construction is very important for Civil Engineering diploma holders.

DETAILED CONTENTS

UNIT 1: Introduction **08 Hours**

1.1 Definition of a building, classification of buildings based on occupancy

1.2 Different parts of a building

1.3 Concept of foundation and its purpose

1.4 Types of foundation-shallow and deep

**2.2.1 Shallow foundation - constructional details of: Spread foundations for walls, min. depth criteria, thumb rules for depth and width of foundation and thickness of concrete block, stepped foundation for masonry pillars and concrete columns, Raft foundation, combined footing grillage foundation.

2.2.2 Introduction to deep foundation and their types

UNIT2: Walls **08 Hours**

2.1 Purpose of walls

2.2 Classification of walls - load bearing, non-load bearing, dwarf wall, retaining, breast walls and partition walls

2.3 Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls

2.4 Partition walls: Constructional details, suitability and uses of brick and wooden partition walls

Masonry

2.5 Brick Masonry: Definition of terms like header, stretcher, queen closer, king closer, frog and quoin, course, bond, facing, backing, hearting, jambs, reveals,

Soffit, plinth, pillars and pilasters.

4.1.1 Bond - meaning and necessity; English, Flemish bond and other types of bonds

2.6 Stone Masonry

2.7 Types of stone masonry: rubble masonry - random and coursed; Ashlar masonry, principles to be observed in construction of stone masonry walls

UNIT3: Arches and Lintels **08 Hours**

3.1 Meaning and use of arches and lintels:

3.2 Glossary of terms used in arches and lintels - abutment, pier, arch ring, intrados, soffit, extrados, voussoirs, springer, springing line, crown, key stone, skew back, span, rise, depth of an arch, haunch, spandrel, jambs, bearing, thickness of lintel, effective span

3.3 Arches:
5.3.1 Types of Arches - Semi circular, segmental, elliptical and parabolic, flat, inverted and relieving
5.3.2 Stone arches and their construction
5.3.3 Brick arches and their construction

3.4 Lintels:
5.4.1 Purpose of lintel
5.4.2 Materials used for lintels
5.4.3 Cast-in-situ and pre-cast lintels
5.4.4 Lintel along with sun-shade or chhajja

UNIT4: Doors, Windows and Ventilators **06 Hours**

4.1 Glossary of terms with neat sketches

4.2 Classification based on materials i.e. wood, metal and plastic and their suitability for different situations. Different type of doors- panel door, flush door, glazed door, rolling shutter, steel door, sliding door, plastic and aluminium doors

4.3 Window - Panel window, glazed windows (fixed and openable) ventilators, sky light window, Louveres shutters, plastic and aluminium windows

4.4 Door and window frames - materials and sections, fixtures and fasteners, hold fasts.

UNIT5: Damp Proofing and Water Proofing **06 Hours**

5.1 Dampness and its ill effects on bricks, plaster, wooden fixtures, metal fixtures and reinforcement, damage to aesthetic appearance, damage to heat insulating materials, damage to stored articles and health

5.2 Sources of dampness - moisture penetrating the building from outside e.g. rainwater, surface water, ground moisture. Moisture entrapped during construction i.e. moisture in concrete, masonry construction and plastering work etc. Moisture which originates in the building itself i.e. water in kitchen and bathrooms etc.

5.4 **Green Buildings**: Importance, components: Site, Rain water harvesting/water efficiency, energy efficiency, material efficiency Indoor air quality design and innovation rating system.

5.5 **Stairs Glossary of terms**: Staircase, winders, landing, stringer, newel, baluster, riser, tread, width of staircase, hand-rail, nosing

5.6 Classification of staircase on the basis of material - RCC, timber, steel, Aluminium

TEXT BOOKS

1. Saiful Islam, Vayu Education of India, Draya Gunj New Delhi.
2. Building Construction by S.K. Kumar, Jay Prakashan Nath Publication, Meerut.

REFERENCE BOOKS

1. Building Construction by Rangwala, SC; Charotar Book Stall, Anand
2. A Text Book of Building Construction by Kulkarni, GJ; Ahmedabad Book Depot
3. A Text Book of Building Construction by Arora, SP and Bindra, SP; Dhanpat Rai and Sons, New Delhi.
4. Building Construction by Sushil Kumar; Standard Publishers Distributors, Delhi

SCHOOL OF ENGINEERING & TECHNOLOGY

BUILDING DRAWINGS

(D060924305)

L	T	P
3	1	0

JUSTIFICATION

Drawing is the language of engineers. Engineering is incomplete without a thorough knowledge of drawing. A Civil Engineering diploma holder must be capable of sketching detailed constructional drawing of various components of building for the purpose of communication with the craftsman. Planning of small buildings, developing a line plan, dimensioning, key plan, and drainage plan should be a part of curriculum. The diploma engineer must be conversant with reading and interpretation of drawings for execution of work.

DETAILED CONTENTS

UNIT 1: Drawing Number: 01 — **2 Sheets**

1.1 Details of spread footing foundations for a load bearing and non-load bearing wall for given thickness of walls with the help of given data or rule of the thumb, showing offsets, position of DPC. The details of the concrete and brick apron have to be shown in the drawing.

UNIT2: Drawing Number: 02 — **1 Sheet**

2.1 Concept of foundation and its purpose of 'T' and Corner junction of walls of 1 Brick, 1-1/2 Brick and 2 brick thick in English bond

Drawing Number: 03

2.2 Drawing plan, elevation of arches: circular arch, segmental arch

UNIT3: Drawing Number: 04 — **1 Sheet**

3.1 Elevation, sectional plan and sectional side elevation of flush door, fully glazed door, fully panelled door with wire gauge shutter. Partly panelled and partly glazed door.

UNIT4: Drawing Number: 05 — **2 Sheet**

4.1 Drawing plan, elevation of a small building by measurement and foundation detail and sectional elevation.

4.2 Drawing detailed working plan, elevation and section of a residential building from a given line plan or given data showing details of foundations, roof and parapet.

UNIT5: Drawing Number: 06 — **4 Sheet**

5.1 Drawings of following floors: Cement concrete floors at ground level and at first floor level.

Drawing Number: 07 — **1 Sheet**

5.2 Drawing of flat roof, showing the heat/thermal insulation provisions.

Drawing Number: 08 — **1 Sheet**

5.3 Drawing details of damp proofing arrangement of roofs and walls as per BIS Code. Show the rain water drainage arrangement also.

TEXT BOOKS

1. Building Drawing by Gajendra Singh, J.P.N.P Meerut.
2. Building Drawing by M.K. Vrashney, Aisan Publications, Muzaffar Nagar.

REFERENCE BOOKS

1. Civil Engineering Drawing by RS Malik; Asia Publishing House.
2. Civil Engineering Drawing by V.B.Sikka ; Katson Publishing, Ludhiana.
3. Civil Engineering Drawing by NS Kumar; IPH, New Delhi.
4. Principles of Building Drawing by MG Shah and CM Kale; MacMillan, Delhi.

SCHOOL OF ENGINEERING & TECHNOLOGY

HUMAN VALUES & PROFESSIONAL ETHICS

(D06VA24305)

L	T	P
3	0	0

JUSTIFICATION

To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings? To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards Value-based living in a natural way.

DETAILED CONTENTS

UNIT 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education — **8 Hours**

1.1 Understanding the need, basic guidelines, content and process for Value Education

1.2 Self-Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self-exploration

1.3 Continuous Happiness and Prosperity- A look at basic Human Aspirations

1.4 Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority

1.5 Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario

1.6 Method to fulfill the above human aspirations: understanding and living in harmony at various levels

UNIT2: Understanding Harmony in the Human Being - Harmony in Myself! — **8 Hours**

2.1 Understanding human being as a co-existence of the sentient 'I' and the material the Body'

2.2 Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha

2.3 Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)

2.4 Understanding the characteristics and activities of 'I' and harmony in 'I'

UNIT3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship — **8 Hours**

3.1 Understanding Harmony in the family – the basic unit of human interaction

3.2 Understanding values in human-human relationship; meaning of Nyaya and program for its fulfilment to ensure Ubhay-tripti; a.Trust (Vishwas) and Respect (Samman) as the foundational values of relationship

3.3 Understanding the meaning of Vishwas; Difference between intention and competence

3.4 Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship

3.5 Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitvaas comprehensive Human Goals

3.6 Visualizing a universal harmonious order in society- Undivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha)- from family to world family!
-Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence **6 Hours**

4.1 Understanding the harmony in the Nature
4.2 Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self regulation
in nature
4.3 Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space
4.4 Holistic perception of harmony at all levels of existence
-Practice Exercises and Case Studies will be taken up in Practice Sessions

UNIT5: Implications of the above Holistic Understanding of Harmony on Professional Ethics **6 Hours**

5.1 Natural acceptance of human values
5.2 Definitiveness of Ethical Human Conduct
5.3 Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
5.4 Competence in professional ethics:
a) Ability to utilize the professional competence for augmenting universal human order.
b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems.
c) Ability to identify and develop appropriate technologies and management patterns for above production systems.
5.5 Case studies of typical holistic technologies, management models and production systems
5.6 Strategy for transition from the present state to Universal Human Order:
a) At the level of individual: as socially and ecologically responsible
engineers, technologists and managers
b) At the level of society: as mutually enriching institutions and organizations
5.7 To inculcate Human Values among Students: The Role of self ,Parents and Teachers
-Practice Exercises and Case Studies will be taken up in Practice Sessions.
5.8 Practical Session also Includes Different Yogic Exercises and Meditation Session

TEXT BOOKS

1. Universal Human Values by Ankit Kumar, J.N.P Meerut.

REFERENCE BOOKS

1. Value Education websites, http://uhv.ac.in, and http://www.aktu.ac.in
2. Story of Stuff, http://www.storyofstuff.com
3. Al Gore, an Inconvenient Truth, Paramount Classics, USA
4. Charlie Chaplin, Modern Times, United Artists, USA
5. IIT Delhi, Modern Technology–the Untold Story

HYDRAULICS AND HYDRAULIC MACHINES LAB

(D060924351)

L	T	P
0	0	2

JUSTIFICATION

Subject of Fluid Mechanics is a basic engineering subject and helps in solving fluid flow problems in the field of Civil Engineering. The subject deals with basic concepts and principles in hydrostatics, hydro kinematics and hydrodynamics and their application in solving fluid -mechanics problems.

DETAILED CONTENTS

S. No	Name of Practical
1	To verify Bernoulli's Theorem
2	To find out venturimeter coefficient
3	To determine coefficient of velocity (C_v), Coefficient of discharge (C_d) Coefficient of contraction (C_c) of an orifice and verify the relation between them
4	To perform Reynolds's experiment
5	To verify loss of head in pipe flow due to a. Sudden enlargement b. Sudden contraction c. Sudden bend
6	Demonstration of use of current meter and pitot tube
7	To determine coefficient of discharge of a rectangular notch and triangular notch.

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SCHOOL OF ENGINEERING & TECHNOLOGY

CONCRETE TECHNOLOGY LAB

(D060924352)

L	T	P
0	0	2

JUSTIFICATION

Diploma holders in Civil Engineering are supposed to supervise concreting operations involving proportioning, mixing, transporting, placing, compacting, finishing and curing of concrete. To perform above functions, it is essential to impart knowledge and skills regarding ingredients of concrete and their properties; properties of concrete in plastic and hardened stage, water cement ratio and workability; proportioning for ordinary concrete; concreting operations and joints in concrete.

DETAILED CONTENTS

S. No	Name of Practical
1	To determine the physical properties of cement such as fineness, consistency, setting time, soundness and compressive strength of cement as per IS Codes
2	To determine flakiness and elongation index of coarse aggregate
3	To determine silt content in fine aggregate
4	Determination of specific gravity and water absorption of aggregates
5	To determine bulking of fine aggregates
6	To determine workability by slump test and to verify the effect of water, fine aggregate/coarse aggregate ratio and aggregate/Cement ratio on slump
7	To determine compressive strength of concrete cubes for different grades of concrete
8	**Non-destructive Test** 1.Rebound Hammer Test 2. Ultrasonic Pulse Velocity Test

SCHOOL OF ENGINEERING & TECHNOLOGY

STRUCTURAL MECHANICS LAB

(D060924353)

L	T	P
0	0	2

JUSTIFICATION

This is a basic engineering subject. The purpose of the subject is to impart basic knowledge and skill regarding properties of materials, concept of stresses and strains, bending moment and shear force diagrams, second moment of area, bending and shear stresses, slope and deflection and analysis of trusses. The above knowledge will be useful for designing simple structural components. This subject is very important to develop basic concepts and principles related to strength of materials. This subject will also enable the students to continue their further education.

DETAILED CONTENTS

S. No	Name of Practical	
1	Determination of yield stress, ultimate stress, percentage elongation and plot the stress strain diagram and compute the value of young's modulus on mild steel	
2	Testing of HYSD Steel	
3	Determination of Young's modulus of elasticity for steel wire with searl's apparatus	
4	Determination of modulus of rupture of a concrete beam	
5	Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point	
6	Verification of forces in a framed structure	

SCHOOL OF ENGINEERING & TECHNOLOGY

BUILDING CONSTRUCTION LAB

(D060924354)

L	T	P
0	0	2

JUSTIFICATION

Drawing is the language of engineers. Engineering is incomplete without a thorough knowledge of drawing. A Civil Engineering diploma holder must be capable of sketching detailed constructional drawing of various components of building for the purpose of communication with the craftsman. Planning of small buildings, developing a line plan, dimensioning, key plan, and drainage plan should be a part of curriculum. The diploma engineer must be conversant with reading and interpretation of drawings for execution of work.

DETAILED CONTENTS

1 Demonstration of tools and plants used in building construction

2 To prepare Layout of a building: two rooms building with front verandah

3 To construct brick bonds (English bond only) in one, one and half and two brick thick:
(a) Walls for L, T and cross junction (b) Columns

4 Demonstration of following items of work at construction site by:
a) Timbering of excavated trenching
b) Laying damp proof courses
c) Construction of masonry walls
d) Laying of tile flooring on an already prepared lime concrete base
e) Plastering and pointing exercise
f) Constructing RCC work
g) Pre-construction and post construction termite treatment of building and woodwork
h) Interlocking tiles